

race? Proponents of space deterrence are primarily concerned with the first half of that problem, but the second half is equally important and equally challenging. Satellites would be more vulnerable and ASAT attacks would be less directly destructive than nuclear weapons, so the prospects for both deliberate and inadvertent space deterrence failure would probably be higher than for nuclear deterrence. And since deterrence stability depends on credible commitments to attack if, and only if, the other side attacks first, the difficulties of reliable attribution in space would introduce additional complications. Without much more comprehensive space situational awareness than is currently available, it can be very difficult for a satellite operator to determine whether a malfunction was caused by an equipment or software failure, a natural space hazard, an inadvertent form of interference, or an ASAT attack, let alone to identify the alleged attacker and the place from which the alleged attack originated.³⁶

In recognition of some of these problems, MacDonald and the Eisenhower Center group downplay aspects of a deterrence strategy that could be especially destabilizing or damaging to the space environment. Instead, they emphasize what they call "deterrence by denial" (primarily non-threatening ways of making satellites less attractive targets), "deterrence by engagement" (restraint due to concerns about unpredictable and uncontrollable side-effects of damage to satellites on which countries depend for many non-military functions) and "deterrence by norms" (e.g., formal or informal rules that could dissuade other countries from interfering with U.S. satellites or acting in ways that damage the space environment by raising the political costs of these actions, or creating an expectation of long-term benefits from reciprocal restraint).

Most of their recommendations would fit equally well with a strategy where reassurance is the dominant principle and deterrence remains in the background, as it did for early-Cold War space policy and as it should be the case for post-Cold War nuclear relations among the United States, Russia, and China.³⁷ Trying to fit their recommendations into a deterrence framework rather one based on reassurance, though, leads the authors to suggest some hedging strategies to prepare for deterrence failure that would have the unintended effect of making both deterrence and diplomacy more likely to fail. For example, they

³⁶ Harrison, et al., "Space Deterrence," pp. 15-16. The authors judge that while it might be difficult to determine the origin and identity of an individual act of interference, especially by jamming or dazzling, it would be highly unlikely that an adversary could destroy a significant portion of US space assets without being identified as the culprit. Perhaps a more plausible scenario is one that they barely mention: that during a time of crisis, a satellite malfunctions due to a natural hazard, a collision with space debris, or an internal failure, but decision makers incorrectly interpret the malfunction as an ASAT attack and attribute it to the other side in the crisis.

³⁷ Early U.S. efforts to promote reciprocal restraint in space included low-level ASAT work to signal to the Soviets that the U.S. could retaliate if the Soviets attacked U.S. satellites and could speed up its ASAT development and deployment efforts if the Soviets seemed serious about putting weapons in space or developing an advanced ASAT capability. In response to some Soviet ASAT tests in the late 1960s, an interagency working group chaired by Manfred Eimer considered whether the US should intensify its own ASAT efforts, but concluded that this was less likely to be a robust deterrent, and more likely to stimulate further Soviet ASAT tests, undermine mutual restraint in space, and reduce overall US space security. See Steven Weber and Sidney Drell, "Attempts to Regulate Military Activities in Space," in Alexander L. George, et al., *U.S.-Soviet Security Cooperation*, New York and Oxford: Oxford University Press, 1988), pp. 390-1.